PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

SECTION J - LIST OF ATTACHMENTS

J.1 LIST OF ATTACHMENTS-STATEMENT OF WORK/SPECIFICATIONS THAT ARE HEREBY MADE A PART OF THIS SOLICITATION AND ANY RESULTANT CONTRACT

Exhibit A - Statement of Work
Exhibit B - Wage Board Determination (WBD)(To be provided as an amendment)
Exhibit C - Performance Evaluation Plan for Evaluating the National Data Buoy Center Technical Services Contractor (NTSC)
Exhibit D - Contractor's Small, Small Disadvantaged and Women-Owned Business Subcontracting Plan, dated April 4,2000

NOTE: Sections K - M (pages 46 through 115) are included in this contract by Reference only; original documents are in the Official Contract File.

SECTION J, EXHIBIT A

STATEMENT OF WORK

FOR

NATIONAL DATA BUOY CENTER'S

TECHNICAL SERVICES CONTRACT

TABLE OF CONTENTS

1.0 ACRONYMS

ARTCC	FAA Air Traffic Control Center
BCS	Buoy Communications System
BBS	Bulletin Board System
CADD	Computer-Aided Design and Drafting
C-MAN	Coastal-Marine Automated Network
DACT	Data Acquisition and Control Telemetry
DBMS	Data Base Management System
DCMC	Defense Contract Management Command
DOC	Department of Commerce
ECO	Engineering Change Order
ECR	Engineering Change Request
EEL	Engineering Electronics Laboratory
EFR	Equipment Failure Report
FIPS	Federal Information Processing Standards
FSR	Facilities Service Request
GMS	Geostationary Meteorological Satellite
GOES	Geostationary Operational Environmental Satellite
GOMP	Gulf of Mexico Project
GSBP	General Service Buoy Payload
IWR	Internal Work Request
LAN	Local Area Network
LNB	Large Navigational Buoy
DRU	Line Replaceable Unit
MARS	Multi-Function Acquisition and Reporting System
MERLIN	Materials, Equipment, and Resources Lifecycle Network
METEOSAT	Meteorological Satellite
MTBF	Mean Time Between Failures
NCDC	National Climatic Data Center
NESDIS	National Environmental Satellite, Data, and Information Service
NOAA	National and Oceanic Atmospheric Administration
NODC	National Oceanographic Data Center
NTSC	NDBC Technical Services Contractor
NWS	National Weather Service
NWSTG	National Weather Service Telecommunications Gateway
OTP	Ocean Test Platform
PIP	Process Inspection Plan
PMLM	Property Management and Logistics Manual
PMO	Property Management Officer
POES	Polar-Orbiting Operational Environmental Satellite
PSOS	Profiler Surface Observation System
QDR	Quality Discrepancy Report
R&D	Research and Development
RBCS	Remote Buoy Communication System
RF	Radio Frequency
RFP	Request for Proposals

RMMC	Remote Maintenance, Monitor, and Control
SDR	System Discrepancy Report
SLSDC	St. Lawrence Seaway Development Corporation
SOW	Statement of Work
SPS	Small Purchasing System
SSC	Stennis Space Center
STF	Sensor Test Facility
TD	Technical Directive
TDR	Technical Data Repository
TSDR	Time Series Data Recorder
TWR	Technical Work Request
USCG	United States Coast Guard
VEEP	Value Engineered Environmental Payload
WAN	Wide Area Network
WPM	Wave Processing Module

consisting of solar panels charging 12 volt batteries, with a separate, non-rechargeable battery back-up.

C-MAN - Coastal-Marine Automated Network (C-MAN) stations consist of sensor, payload, and power systems mounted on towers or masts, and are deployed on fixed site shore locations in coastal areas, on islands, or on offshore platforms. Like the moored buoy stations, C-MAN stations collect and transmit data through GOES. Additionally, most stations are equipped with a system that provides phone communication with the payload, with data acquisition and availability every 15 minutes. Most stations are solar powered, although there are a few that have A/C power available.

Waves - In support of the NDBC Waves Program, NDBC delivers real-time hourly wave measurements from all moored buoy platforms and, using laser wave staffs, from a few of the C-MAN fixed platforms over the water. Significant wave height and period, and spectral energy densities, are reported to NWS on a regular basis. Some of the buoy platforms also measure and report to shore, information derived from special platform wave instrumentation, which will, when processed through NDBC shore-based processing algorithms, deliver real-time measurements of directional wave parameters. Directional wave measurements are by far the most sophisticated of NDBC's marine sensing capabilities.

Drifting Buoys - The drifting buoy effort at NDBC has been primarily in support of other NOAA and non-NOAA agencies. At this time, the drifting buoy is the only data acquisition system that NDBC procures as an entire platform package, including the instrumentation. NDBC acquires such systems competitively from various suppliers using primarily performance - based requirements but also invoking key mechanical and hull configuration design specifications based on NDBC's expert knowledge in such areas, obtained over years of development and modeling analyses.

3.0 SCOPE OF WORK

This SOW describes the functions to be performed by the Contractor for the operation, maintenance, and repair of environmental data collection platforms and networks; operation of the NDBC facilities; testing of existing and new buoy systems and fixed systems and equipment; data processing; data quality assurance and archival; system supply support; hardware quality assurance; safety and environmental compliance; configuration management; logistics management and support; and engineering and scientific support for NDBC development and test programs.

The Contractor shall provide the management, technical, administrative, and clerical staff to accomplish the functions and work scope contained herein. The service provided shall be limited to the level of effort set forth in the Schedule of the contract. Annually, NDBC uses Control Technical Directives (CTD)to allocate the number of staff hours proposed by the contractor to each NDBC Division or major work functions. NDBC Divisions then issue Technical Directives (TD) to further breakdown the functional work needed. NDBC assigns a number series to each Division or major work function to be utilized in tracking of the resources. The breakdown structure is as follows:

Engineering	100000 series
Operations	200000 series
Data Systems	300000 series
Programs	400000 series
Program Support	500000 series
QA & Safety	600000 series
FAA GOMP	700000 series

Appendix A is a copy of each of the CTDs and TDs issued during this contract year.

The actual task for contract work is issued by the use of an Internal Work Request (IWR). Appendix B is a copy of the instruction which defines the process for IWRs. All tasking of the contractor must be performed in accordance with the instructions contained within the CTD, TD, and IWR structure. Appendix C lists applicable NDBC Instructions, Processes, and Procedures. Government personnel will function as Technical Monitors on all TDs and IWRs within each functional area. The work set forth under the TDs may require fast response and performance in remote locations.

NDBC carries out its mission under three broad programs: the NWS operational marine support program; reimbursable programs, including provision of oceanographic data; and the FAA Gulf of Mexico Communications Program (FAA GOMP). These programs are described below.

3.1 NWS Operational Marine Support

The marine networks dedicated to supporting the NWS operational marine forecasting and warning mission consists of 58 moored buoys and 49 C-MAN stations. These are funded by NWS and the number and types of stations are not expected to change. NDBC requirements for the NWS generally include the following measurements: wind speed, wind direction, wind gust, barometric pressure, air temperature, sea surface temperature, and significant wave height period and spectra. Additionally, measurements at selected stations include relative humidity, continuous winds, water level, and visibility. The number of relative humidity sensors in both the moored buoy network and C-MAN is slowly growing and may become an NWS requirement before FY 05.

For reference, the record of NDBC system performance since 1993 for NWS stations is shown in the following table. The system performance percentage is derived from the ratio between the total number of hourly required measurements actually received, divided by the total number of such hourly measurements possible. It reflects the success of the entire process from system design to product delivery. In the future, NDBC expects to at least match its historical record; improvement, of course, is desirable.

SYSTEM PERFORMANCE (%)

	MOORED BUOYS		C-MAN
YEAR	MET	WAVE	MET
1994	87.8	86.4	89.4
1995	86.5	88.0	92.0
1996	89.3	88.9	91.6
1997	90.4	88.6	91.4
1998	85.0	85.2	92.0
1999[1]	89.3	88.0	94.8

[1]Percent data provided is for three-fourths of fiscal year 1999.

NDBC estimates approximately 5% of total possible data are lost from the moored buoy network, and 3% of total possible data are lost from C-MAN due to factors beyond the control of NDBC or its contractor, such as weather delays, USCG ship scheduling or emergency response for higher priority mission, and so forth. It is not acceptable for NDBC network data delivery to drop below 80% for a period of 30 days or more.

3.2 Reimbursable Programs

NDBC provides meteorological and oceanographic measurements for non-NWS customers under reimbursable agreements. Specific or special requirements are stated in individual agreements. At the present time, such agreements are in effect for 9 additional moored buoys and 14 reimbursable station upgrades, 5 C-MAN stations, and 14 PSOS stations. The size of NDBC's reimbursable program may grow or become smaller; a large change in the level of activity is not expected.

The data requirements of each reimbursable project such as the Profiler Surface Observation System (PSOS) and the St. Lawrence Seaway Development Corporation (SLSDC) are provided in more detail in the Overview of NDBC Organization and Operations (Appendix D). However, the measurements provided by reimbursable stations are often the same or very similar to those for the basic NWS marine network stations (Section 3.1). The configuration of most reimbursable stations provides for at least one special measurement system added to meet unusual requirements of the sponsor. This is often accomplished by adding a special measurement system to an NWS-supported station, as long as it is assured that support to the NWS is not adversely affected. For example, the wave systems aboard 11 NWS-sponsored moored buoys are enhanced by a non-NWS sponsor to provide wave directions (versus non-directional systems for NWS). In other cases, a sponsor may support operation of a complete station; for example, a moored buoy may be specially equipped with Acoustic Doppler Current Profilers (ADCP) to measure ocean currents, but also provide meteorological and sea state data that are standard for an NWS buoy.

3.3 FAA GOMP

The FAA GOMP is developmental project to demonstrate and evaluate a unique, experimental buoy-mounted communications system designed to expand the range of aircraft communications to open ocean areas. The general system and requirements are described in more detail in the Overview of NDBC Organization and Operations (Appendix D) and the paper A Buoy-Mounted Air Traffic

Control Radio Relay System (Appendix E). These buoy systems are equipped with meteorological data collection systems that satisfy NWS requirements. Pending the outcome of tests and approval by the FAA, there is potential for operational deployments in the Gulf of Mexico and elsewhere in this program. Additional information on this program is available in the FAA Gulf of Mexico Buoy Communications System Overview (Appendix F).

Note: Offerors are not to include staffing for this work in this proposal. This section is informational only. At such time as a modification to the Interagency Agreement is completed tasking NDBC to perform specific tasks, a separate RFP for those defined tasks may be issued to the incumbent contractor requiring a proposal to be submitted for negotiations resulting in a modification to the existing contract.

4.0 ENGINEERING SUPPORT

The Contractor shall provide properly trained, experienced resources in support of the engineering function. Such resources shall be used to support the operation, management, design, development, and test and evaluation in all functional engineering areas associated with support of the NDBC. During the contract year July 1, 1997 to June 30, 1998 the NTSC provided a total of 60,079 staff-hours in engineering support through Control Technical Directive, CTD 100000. This total included 3,748 hours to support the FAA Gulf of Mexico project.

During the contract year July 1, 1998 to June 30, 1999, the NTSC provided a total of 58,688 staff-hours in Engineering support through Control Technical Directive, CTD 100000. The FAA Gulf of Mexico Project (GOMP) support was provided under a separate CTD 700000 which provided 20,897 staff-hours during this period.

During the current contract year, July 1, 1999 to June 30, 2000, NDBC expects 54,697 staff-hours in Engineering support. The FAA GOMP support is tasked under a separate Control Technical Directive, CTD 700000 which provides for 11,463 staff-hours through February 2000, in support of this project. Activities provided under CTD 700000 include resource and project management, system design, development, and test as well as buoy maintenance and technical documentation.

During the current contract year the 54,697 Engineering support staff hours are divided into the following 15 broad level-of-effort Technical Directives:

Management

TD101000 - Engineering Management	9,711 staff hours

Development/Life Cycle Support

TD106000 - Embedded Systems Software Engineering	6,388 staff hours
TD124000 - Developmental Systems Engineering Support	4,100 staff hours
TD126000 - Sensor Systems Engineering and Calibration Support	3,080 staff hours

Systems Operation and Maintenance Support

TD108000 - General Electronic Equipment Maintenance & Support	9,375 staff hours
TD109000 - Operational Systems Integration Support	5,285 staff hours
TD110000 - Operational LRU Engineering Support	4,510 staff hours
TD111000 - General Support for Calibration of Sensor LRUs & Test Equipment	1,825 staff hours
TD115000 - Reliability Engineering Support	1,825 staff hours
TD126000 - Sensor Systems Engineering and Calibration Support	3,080 staff hours

Installation Design Support

TD118000 - NDBC Technical Data Repository and Configuration Management	1,825 staff hours
TD127000 - Oceans/Mechanical Systems Engineering	6,423 staff hours
TD135000 - Field Support and Shop Fabrication for Engineering Projects	350 staff hours

4.1 Engineering Management

The Contractor shall provide properly trained, experienced resources in support of the Engineering function. Such resources shall be used to support operation, management, design, development, and test and evaluation in all functional engineering areas associated with support of the NDBC. New systems or measurements may be added or existing ones expanded, modified, curtailed, or deleted as requirements change or programs are redirected. The present systems used by NDBC are described in the following sections.

4.2 Engineering and Developmental Support

In response to NDBC requirements, the Contractor shall provide engineering support as follows:

- support operational networks, developmental projects, and scientific investigations involving NDBC systems;
- prepare design packages, specifications, and any other required documentation for the procurement of payloads, buoy hulls, mooring system components, drifting buoys, C-MAN towers, and all associated mounting hardware;
- develop new measurement systems and techniques;
- monitor hardware development, fabrication, and testing, and provide status reports and recommendations to NDBC Technical Monitors;
- prepare documentation required to transition new systems from developmental and engineering status to operational status;
- conduct Operational Testing and Evaluations (OT&E) activities for systems transitioning from test status to operational status;
- prepare design packages for the mechanical and electrical integration of buoy hulls and fixed platforms with the sensor, power, and support systems required for the mission;
- develop system integration, test and evaluation plans;

- design mooring systems;
- implement and monitor operational systems tests;
- analyze operational systems test data and prepare test reports; and
- perform engineering data analyses for the purpose of failure analysis and make detailed written technical reports of results.

The Contractor shall maintain knowledge and awareness of advances in automated marine systems and technology. The Contractor shall work to improve the techniques used in gathering, processing, transmitting, and distributing data. In conjunction with this, the Contractor shall, as a minimum: perform technical literature searches, communicate with personnel in similar or related fields, monitor existing and proposed technology developments applicable to meteorological and oceanographic stations, and write and present technical papers based on the application of NDBC technologies.

4.3 NDBC Measurement Platforms

NDBC stations measure and transmit environmental data. The geographic location of the measurement station drives the platform requirements which drive type selection for the station. The measurements taken at NDBC stations are supported by two fundamentally different platform types, buoy platforms and fixed. platforms. The Contractor shall provide technical services for the measurement platforms currently in use and participate in the development and support of any new measurement platform designs. The present measurement platforms used by NDBC are described in the following sections:

4.3.1 Physical Characteristic of NDBC Buoy Platforms

The standard moored buoy hull types used by NDBC are: the 12-meter (m), 10 - m , and 3 - m discus; the 6-m boat-shaped Navy Oceanographic and Meteorological Automated Device (NOMAD); and the Value Engineered (VE) NOMAD. The standard drifting buoy used by NDBC is based the First Global Atmospheric Research Program Global Experiment (FGGE) design. The technical details of the can be found in Overview of NDBC Organization and Operations (NDBC Program Document 99-03).

4.3.2 Physical Characteristic of NDBC Fixed Platforms

NDBC uses a variety of fixed platforms to support non-buoy based stations. In many cases large variances around a standard platform design are required to accommodate unique station configurations. The standard fixed platform types used by NDBC are: 30-ft Rhonn tower, the NDBC trolley mast, the light-weight NDBC trolley mast, and the folding Profiler Surface Observing System mast. The technical details of the can be found in Overview of NDBC Organization and Operations (NDBC Program Document 99-03).

4.4 Instrumentation for NDBC Measurement Platforms

In order to promote operating efficiency, the Contractor shall maintain, and where possible, improve: (1) standardization of platform mechanical configuration design; (2) utilization of component inventory that is applicable for instrumentation of both the buoy and fixed platform configurations; and (3) utilization of Commercial Off the Shelf (COTS) sensors and equipment in NDBC systems.

4.4.1 Payload

4.4.1.1 Payload Description

For explanatory purposes only, the simplified block diagram in Figure 1 (page 15 A) is used to address NDBC's terminology and definition of the platform instrumentation. Everything within the single solid line is called a payload, i.e. the central processor, power conditioning and control, UHF GOES transmitter, and sensors. The sensors will always include, as a minimum, a baseline set of meteorological sensors as described in section 4.4.2.1. All NDBC's C-MAN and moored buoy platforms report to shore real-time data via the GOES. NDBC currently has several payload types in full service: General Service Buoy Payload (GSBP), Data Acquisition and Control Telemetry (DACT), Value Engineered Environmental Payload VEEP), and the Multi-functional Acquisition and Reporting System (MARS). NDBC procured 110 DACT payloads, complete with sensors, in 1981-1982; 86 VEEP payloads, complete with sensors, were acquired in 1986-1987. There are 60 MARS electronic units. All payload types have performed commendably in the field and are used throughout the operational networks. A key feature of MARS is the flexibility and modularity that it offers. Since NDBC also refers to MARS as a payload, there is some ambiguity in terms, because MARS does not include sensors. MARS can interface with either set of sensors used in the two main payloads. It can also interface with any certified GOES transmitter, with only minimal modification, and with any Frequency Modulated (FM)transmitters.

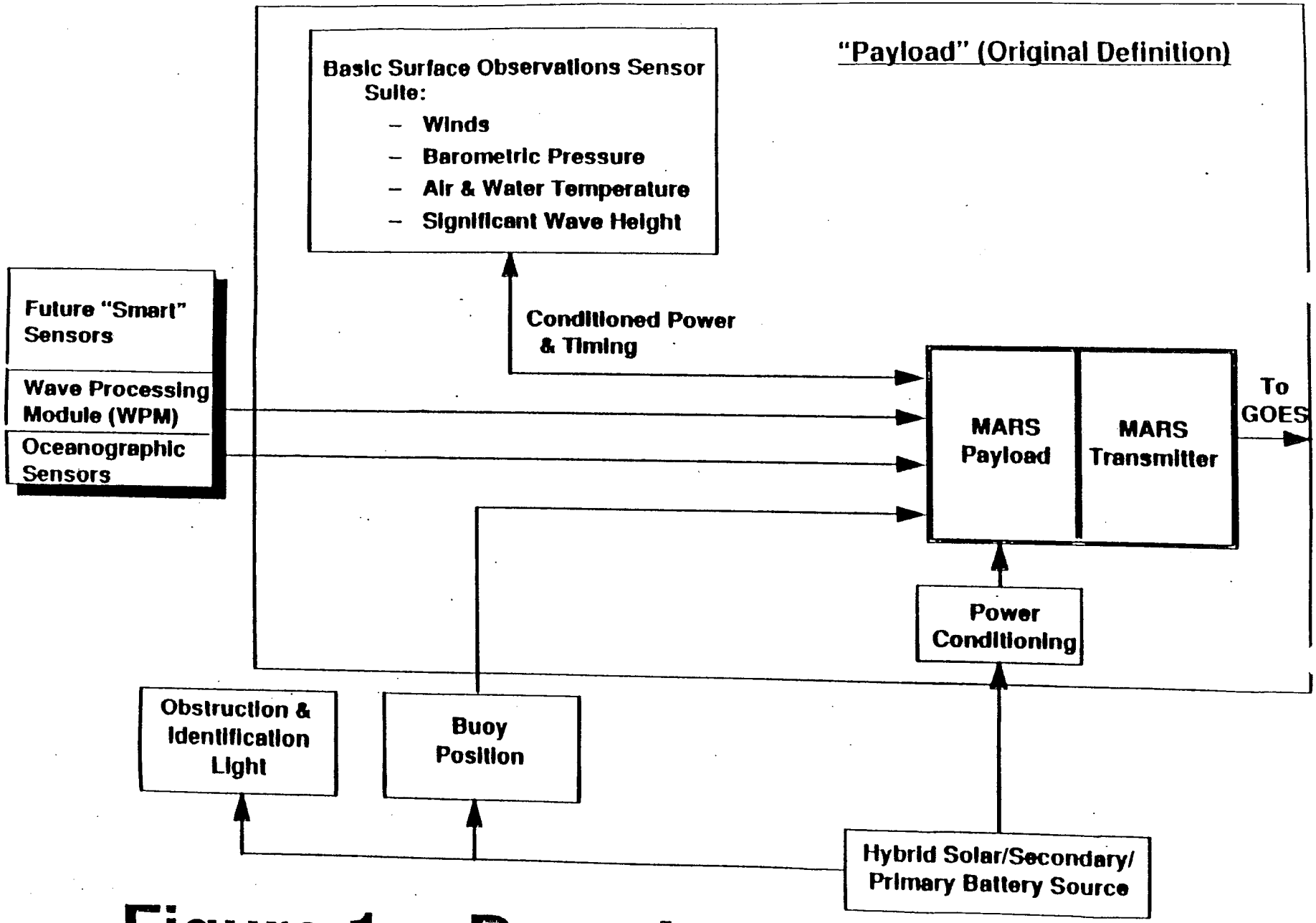

Figure 1 -- Buoy Instrumentation

The age of these payloads is obviously a serious issue because their reliable performance is the key to delivering reliable data from the platforms. Recognizing this, NDBC is developing a "next generation" system.

The instrumentation block diagram of Figure 1, labeled for Buoy Instrumentation, also applies to much of the C-MAN configuration. The main differences are: (1) there is no position location device required; (2) alternating current (AC) power is available as prime power at some of the C-MAN sites; and (3) only those fixed C-MAN platforms that are over the water are instrumented for direct measurement of waves. In these circumstances, NDBC uses a laser ranging device, which, in essence, constitutes a wave staff.

4.4.1.2 Payload Support

Payloads control data acquisition cycles and timing, perform on-board data processing, format the data into a message, and transmit the message, either by Radio Frequency (RF) transmission via satellite or by telephone landline. The Contractor shall provide technical services for the payloads currently in use and shall participate in the development, acquisition, and support of any new payloads developed either in-house or commercially.

The Contractor shall:

- write, maintain, modify, and document software for these payload systems and for Personal Computer (PC) compatible test sets;
- maintain and repair payload systems;
- evaluate proposed design changes and modifications to payload systems;
- prepare required technical modification specifications, drawings, software changes, and evaluation plans and procedures for payload system changes;
- prepare detailed design documentation required to substitute one type payload for another on existing stations;
- perform engineering analysis of data for the purpose of failure analysis; and

- prepare technical reports detailing results of failure analyses or other test results.

The Contractor shall also assist in the formulation of new payload requirements and concept studies. In support of new payload development, the Contractor shall:

- prepare detailed designs and specifications for hardware and software;
- prepare complete hardware and software documentation;
- prepare specifications for procurement of parts, materials, and services acquired from vendors;
- fabricate and assemble prototype payload systems;
- provide detailed hardware and software test requirements and plans;
- perform prototype payload system testing; and
- prepare detailed technical reports of test results.

4.4.2 Sensors

4.4.2.1 Sensor Description

The basic suite of surface observations depends upon the use of dual wind sensors and, on buoys, dual barometers as well, for reliability and data quality control purposes. Air and sea surface temperatures and wave energy spectra, from which significant wave height and wave period are derived, are measured by all moored buoys and some over-the-water C-MAN fixed platforms. NDBC has a NIST-traceable calibration capability. Appendix G is a listing of all NDBC sensors.

NDBC places particularly strong emphasis on achieving and maintaining high reliability in the field performance of operational sensors. All such sensors are treated as separate LRUs. They are carefully tracked by serial number throughout the useful life of the sensor(s) to accumulate MTBF data at the LRU component level and at the payload system level.

4.4.3 Power System

4.4.3.1 Power System Description

Solar based power is widely used on the moored buoy and C-MAN platforms. NDBC uses a variety of commercially available components in a hybrid system including solar power panels, secondary (rechargeable) batteries, primary (consumable) batteries, and electronic switching devices. Buoy primary batteries are designed to provide at least two to six months life if the charging system fails.

At some C-MAN sites, AC power is available and is usable as a substitute for solar power in charging the secondary (rechargeable batteries). At remote C-MAN sites where there is reduced solar radiation, primary batteries are used for back-up. Although specific power configurations can vary as to number of components, there is commonality between C-MAN and moored buoys as to the types of primary battery, secondary battery, solar panels, and electronic switching devices.

Twelve volts (minimum) is the standard voltage delivered by the NDBC power system. Power is conditioned within the payload, i.e., converted to other voltages, regulated, monitored, time controlled, and distributed.

4.4.3.2 Power System Support

The Contractor shall furnish technical support for power systems used on land-based and buoy stations.

The Contractor shall:

- provide detailed configuration and design drawings for power systems for each new station deployed;
- maintain and modify drawings and documentation for existing stations;
- monitor system performance and perform failure analyses on power systems; and
- develop solutions to power problems.
- investigate and monitor the development of power system technology for possible application to NDBC programs.

4.4.4 Wave Measurements and Advanced Instrumentation

A significant level of engineering effort has been successfully applied to the development of high quality directional wave measurements for NDBC's moored buoys having axial symmetry about the vertical axis, i.e., discus configurations. By processing outputs of a hull-mounted magnetometer and a Datawell bv HIPPY (heave, pitch, and roll) sensor, an operational capability was achieved in the late 1980s using the DACT payloads. Using the DACT payload, a lower cost alternative (albeit lower quality directional data) was accomplished by processing outputs of a biaxial magnetometer and an inclinometer aligned to the buoy' s vertical axis. These DACT-based systems successfully led to an NDBC mini-network of buoys having directional wave measurement capability.

There are many variations involving relatively sophisticated processing algorithms which can be applied in the research and development of improved directional wave measurement systems. To enhance such efforts and move toward modularity, NDBC completed a "smart" wave sensor which has been successfully demonstrated in prototype configurations using the VEEP payloads. This smart sensor, called the Wave Processing Module (WPM), is also used with the MARS as it is phased into the operational network (see Figure 1). The WPM takes non-directional or directional wave sensors' inputs, processes and formats the data. A waves data block is then fed to the buoy payload, via a serial data interface, for inclusion in the hourly message transmitted to shore.

NDBC has also developed a Time Series Data Recorder (TSDR) which features a high data capacity for up to a few months of raw data inputs from a variety of wave, wind and attitude sensors. The TSDR and WPM are expected to be widely used through 2000 and beyond.

4.5 Engineering Design and Enhancement

The Contractor shall provide a broad range of electrical, digital electronic, mechanical, and software engineering support in the design of new systems and equipment; the modification, improvement, and enhancement of existing systems and equipment; and in special developmental projects and engineering studies.

When directed, the Contractor shall:

- perform conceptual and feasibility studies for new systems and equipment, using computer simulation and modeling techniques where appropriate;

- analyze electrical, analog and digital electronic, mechanical, and software systems, equipment, and components, such as fixed platforms, buoy hulls, moorings, sensors, payloads, mounting hardware, and materials, using manual and automated tests and evaluations, as well as computer simulation and modeling techniques;

- prepare detailed designs and specifications for hardware and software;

- prepare specifications and other documentation for the procurement of parts, materials, and services from vendors;

- fabricate and assemble prototypes of new systems and equipment;

- prepare detailed hardware and software test requirements, plans, and procedure;

- perform any required tests; and

- prepare detailed technical reports of test results.

The Contractor shall support special, possibly unique, new and investigative projects or tasks involving unusual studies or evaluations, atypical data monitoring and analysis tasks, or systems development for applications not in the normal sphere of NDBC activities. The Contractor shall support these activities by performing such tasks as:

- development and evaluation of specifications, SOWs, and RFPs for the procurement of sensors, payloads, software, and any other equipment, materials, or services which may be required;

- participation in design reviews and ongoing coordination with vendors;

- development and implementation of test and calibration plans and procedures, and the evaluation of the resultant data;

- preparation of installation designs and procedures; and analysis of test data and preparation of detailed written test results.

- conduct clinical observations to quantify sensor performance and to evaluate new candidate sensors during the developmental phase.

4.6 EEL and Calibration and Test Facilities

The Contractor shall operate the Engineering Electronics Laboratory (EEL) and Calibration and Test Facilities to support NDBC's operational and developmental activities. In addition to housing the maintenance, repair, and calibration functions for all operational LRU components, the EEL, together with related facilities, shall be the focus for diagnosing, troubleshooting, correcting, and validating all reliability problems in NDBC systems and equipment. Related facilities include: sensor calibration areas for winds, barometric pressure, air and ocean temperatures, humidity, and waves; large environmental walk-in chamber; wind tunnel; Sensor Test Facility (STF); Buoy Dock Integration and Test Facility (usually called "the dock").

In providing laboratory support of operations, the Contractor shall:

- inspect, test, calibrate, maintain, and repair sensors, LRUs and subassemblies, as well as designated auxiliary equipment, such as test sets;

- perform printed circuit board test and repair;

- control and maintain a separate spare parts inventory dedicated to laboratory use.

- establish appropriate stocking levels for these spare parts and initiate stock replacement purchase requests; and

- operate and maintain a status control system for all LRUs and components down to the PC board level.

In providing laboratory support of test and engineering functions, the Contractor shall;

- perform reliability tests on LRUs, systems, and other equipment;

- fabricate bench test models, breadboard models, and prototypes of new LRUs, systems, or other equipment in the development phase;

- perform electrical, digital electronic, mechanical, and environmental tests on bench test models, breadboard models, and prototypes;

- support and perform special tests of LRUs, complete systems, and other equipment in the laboratory and in the field; and

- prepare detailed written technical reports describing activities and results.

The Contractor shall utilize the STF, dock, and unmanned Duck, N.C. Engineering Test Facility for the testing, evaluation, and qualification of hardware and software. The Contractor shall:

- develop test plans and procedures for hardware and software verifications;

- design all hardware and electrical parts required for the installation and operation of equipment and sensors to be tested;

- design hardware/software and data acquisition interfaces required to perform tests and acquire data;

- perform tests and evaluations of meteorological and oceanographic sensors and systems; and

- evaluate test results and write detailed technical reports of the results.

4.7 Reliability Engineering

The Contractor shall develop, implement, and maintain a reliability engineering program capable of identifying and correcting system hardware and procedural problems that adversely affect NDBC operations, maintaining technical cognizance of all element of NDBC operational systems.

The Contractor shall:

- develop and maintain manual and automated techniques for early identification of potential and actual failures and failure trends, using tools such as

probability and statistical analyses to assess performance and predict reliability;

- analyze all field trip reports for equipment failures and other problems and enter this data into the Equipment Failure Report (EFR) and System Discrepancy Report (SDR) systems;

- monitor and evaluate system and individual LRU failures and operational histories to determine failure trends and causes for failures;

- compare failure data with long-term trend data to determine if equipment modifications or changes are required to improve reliability;

- develop specific procedures and tests to establish the existence of problems and evaluate corrective actions taken to eliminate problems;

- maintain and use the NDBC owned and provided data management system, including the LRU, equipment, and subassembly tracking system to: (1) update and maintain the LRU history; (2) assign, track, and close out SDRs and EFRs; (3) implement and track hardware configuration management; and (4) monitor and produce Mean Time Between Failures (MTBF) reports; and

- issue detailed technical reports on system evaluations, test results, failure trends detected, results of corrective actions taken, and revised hardware life predictions.

4.8 Engineering Documentation

The Contractor shall provide engineering drafting for the preparation of new drawings, drawing revisions, and other related documents in support of NDBC activities. Drafting practices shall conform to MIL-T-31000 and MIL-STD-100E, unless otherwise directed.

The Contractor shall:

- operate a Computer-Aided Design and Drafting (CADD) system which currently utilizes Sun Microsystem drawing workstations and AutoCAD software;

- prepare drawings and drawing revisions and develop drawing trees for new and existing stations, systems, and other hardware;

- review all new drawings and drawing revisions for completeness and accuracy prior to submittal for NDBC approval;

- initiate Engineering Change Requests (ECRs) and implement, upon NDBC approval, Engineering Change Orders (ECOs); and

- maintain up-to-date drawing and other documentation files utilizing hard copies and/or electronic storage devices.

The Contractor shall maintain appropriate skills to utilize the CADD equipment as it is enhanced with more advanced workstations or software revisions.

4.9 Configuration Management and Control

The Contractor shall provide configuration management and control including identification and accounting to ensure that NDBC buoy and fixed platform systems are identified correctly on released documentation, in compliance with the requirements of applicable NDBC Instructions and the NDBC Configuration Management Plan.

As a point of reference, there were about 100 ECRs submitted annually in the last three years. Of these, 13% were canceled with no action, and 14% were disapproved. The yearly average for released Level A drawings is 142. On average, 18 Level B design packages are released each year as well as 13 engineering procedures. These ECRs, ECOs, waivers, deviations, and all new technical documentation must be routed through and approved by the cognizant NDBC division(s).

The Contractor shall:

- provide the necessary coordination with NDBC relating to the approval and release of all documentation such as ECRs, ECOs, drawings, specifications, and computer software documentation;

- ensure the timely coordination and execution of all waiver and deviation requests;

- reproduce technical documentation on an as-needed basis, and release the most recent, approved drawings, sketches, specifications, procedure, and manuals; and

- ensure that the latest approved documentation is transmitted to the appropriate working areas and is made available in response to requests.

5.0 OPERATIONS AND MAINTENANCE SUPPORT

5.1 Planning and Operations Control

The Contractor shall provide properly trained, experienced resources for the operations and maintenance support function. The Contractor shall operate the industrial facilities. Plans and schedules shall be developed based on the NDBC Property Management and Logistics Manual, Overview of NDBC Organization and Operations, NDBC published maintenance schedules, and directions from the applicable government TD Monitor.

The Contractor shall:

- propose improvements of on-site industrial activities, field service, operational system and network reliability, and station electrical and mechanical installation configuration; and

- propose detailed plans and schedules for the various operations and maintenance activities, including station establishments, refurbishment, deployments, field service visits, field tests, and retrievals.

5.2 Industrial Facility Operations and Maintenance

The industrial facility, and the fleet of buoy hulls represent a considerable investment by the government. The facility operation and maintenance, and the maintenance of the hulls are an important part of this contract. The contractor shall mechanically refurbish, integrate with payload and power systems, and test buoys on site prior to deployment. Equipment for C-MAN, PSOS, GSOS, and other fixed platform stations shall be prepared for field installation.

As directed and in accordance with established NDBC designs and procedures, the Contractor shall:

- perform mechanical fabrication, modification and repair of buoy hulls, to support buoy refurbishment and deployments;

- perform mechanical fabrication, modification and repair of equipment such as moorings, cables, mounting racks, sensor mounts, sensor masts, and equipment enclosures to support both the operational network and engineering developmental and reliability improvement activities;

- provide electrical/electronics integration and testing of payload and power systems on buoys to support both the operational network and engineering developmental and reliability improvement activities;

- sandblast and paint aluminum and steel NDBC hulls and components;

- maintain and operate government-furnished small boats as directed;

- perform routine minor maintenance of machine shop equipment;

- monitor preventive and scheduled maintenance of buildings and installed equipment; and

- maintain orderly and clean working spaces and organize and maintain the industrial-apron material storage area.

5.3 Field Support

The Contractor shall support the deployment, servicing, and retrieval of buoys and the installation and servicing of C-MAN, Profiler Surface Observation System (PSOS), GSOS, and other fixed platform stations. Additionally, support shall be provided to deploy, retrieve, install, and service stations and buoys for other NDBC projects such as FAA, SeaWiFS, and engineering field tests of new systems. This support shall include electronic and mechanical repairs, LRU installation and replacement, and mooring system deployments and retrievals in support of the operational networks and developmental systems.

As directed, the contractor shall:

- deploy and retrieve buoys to support both the operational network and developmental activities, from USCG and other government provided resources;

- install, upgrade, and disestablish fixed platform stations;

- troubleshoot and repair station anomalies to restore station data;

- interface with USCG, and other resources as appropriate for transportation to NDBC buoy or fixed platform stations; and

- act as the NDBC representative to data sponsors and customers, and to C-MAN, PSOS, GSOS, and other fixed platform site occupants, as required.

5.4 Operational Data and Systems Analysis

All environmental, engineering and other systems data shall be monitored to ensure that they meet NDBC accuracy and timeliness standards. The contractor shall be responsible for implementing payload configuration and verification for both the operational network and developmental systems. All meteorological and oceanographic data must be monitored, and all data that do not meet accuracy standards must be identified, documented, and withheld from real-time release and archival.

Many NDBC field activities are supported by USCG transportation resources. While such activities typically occur between 6:00 a.m. and 10:00 p.m. on weekdays, they do occasionally occur after 10 p.m. and on weekends.

The Contractor shall:

- obtain calibration data for all operational sensors and verify implementation of proper scaling coefficients;

- determine coefficients required to reduce station pressure to sea level pressure;

- load and verify the payload setup parameters for all operational and developmental systems;

- determine coefficients required to compensate for site specific magnetic fields;

- collect or generate site-specific configuration control parameters and load them into operational payloads before deployment;

- maintain, and when appropriate, and with NDBC concurrence, adjust these parameters via telephone access or receivers, and document these changes;

- document and maintain payload parameter configuration;

- monitor system test performance and identify anomalies that occur during such tests;

- support all service visits in real time and provide immediate evaluation of environmental and station status data during service visits, deployments, and all field operations;

- provide daily monitoring and review of system status, station positions, and "housekeeping" parameters, such as battery voltages, from all operational stations;

- document all station problems and anomalies, prepare SDRs, and update the NDBC owned and provided data management system to log station activities, record station configuration, and document problems;

- identify, document, and report daily, station problems and apparent sensor and system data anomalies;

- recommend position data processing requirements and data dissemination requirements with Service Argos and conduct ongoing liaison to define, maintain, upgrade and provide for communications and processing requirements:

- maintain station logs and other documentation;

- perform and document field evaluations of the function of developmental systems; and

- monitor, and when directed, evaluate performance of non-standard measurement systems provided by NDBC stations during field evaluations or experiments, but which may not enter the national archives.

6.0 DATA SYSTEMS SUPPORT

Data Systems support includes all areas of data processing, data analysis, and data quality control. During the contract year July 1999 through June 2000, the support was structured with 10 TDs and approximately 60 IWRs. The annual commitment of effort to complete this work has typically ranged from47,000 - 52,000 hours per year.

6.1 DATA SYSTEMS MANAGEMENT

The contractor shall provide properly trained, experienced resources to support all of NDBC's data processing, analysis, and quality control requirements. Data Systems functions include short and long range information technology planning; computer system management; computer operations and maintenance; software development and maintenance; system life cycle management; data communications; remote monitoring and management of the real-time processing and distribution system in Silver Spring, MD; network management for both the local and wide area networks; data analysis; station configuration management; and environmental data quality control. NDBC has a distributed computing environment that utilizes a client server architecture to support basic office automation; electronic mail; electronic document management; relational database applications; and mission related data applications. The range of hardware in place to support this includes super mini-computers; single and multi-processor servers; advanced workstations; personal computers; and various peripherals. Appendix H is a list of the NDBC owned and provided software applications. Appendix I is a list of the NDBC owned and provided hardware.

The annual level of effort typically associated with this work has been approximately 2,000 hours.

6.2 Information Technology Systems Planning

The Contractor shall support the NDBC information technology short and long range planning effort. In order to remain abreast of the rapid evolution and constant change in this technology, the Contractor shall continuously review hardware, software, and data communications technology to identify equipment and systems required to maintain and improve NDBC operations, meet increased demand, or increase system efficiency. New technologies shall be integrated into the NDBC operational processing and communications environment as required; however, such integration shall not interfere with the real-time processing, quality

control, and availability of environmental data to the operational forecasting and warning community.

The Contractor shall:

- conduct feasibility studies and requirements analyses;
- draft requirements documents and specifications, conduct market surveys, and prepare cost benefit analyses;
- propose system enhancements, and perform vendor product evaluations;
- prepare plans, reports, and designs, as required, for data communications, LAN and WAN system networks, new automated information technology systems, the upgrade of existing information technology systems, new software systems, the upgrade of existing software systems, database systems, hardware and software configuration management, documentation, coding, graphical user interface (GUI), configuration standards, and software life cycle management.

The annual level of effort typically associated with this work has been approximately 1,000 hours.

6.3 Computer Systems Management

The Contractor shall be responsible for the management and operation of all NDBC computer and computer-related communications systems. These systems include RISC Symmetrical Multiprocessing (SMP) UNIX front-end processors, UNIX database servers, PC and RISC desktops, Web and ftp servers, data quality systems, Office Automation systems, firewall computer security systems, network servers, mail servers, CADD system, and document management system.

The NDBC computer systems are primarily located in the NDBC facilities at SSC, MS; however, two IBM RS/6000 RISC SMP processors are located at NWSTG in Silver Spring, MD. These make up the NDBC real-time processing system and perform the front-end processing for the client/server system. At the NDBC facility at SSC, one additional IBM RS/6000 processor is provided for development and backup purposes. The database servers (a primary and backup server) are UNIX-based Data General AV9500 RISC SMP systems with Redundant Array of Independent Disks (RAID) Clariion disk systems using the Oracle Relational Database Management

System(RDBMS). Various Oracle tools are available including Designer and Developer 2000 and are used to design and develop the required databases and applications. Various peripherals and PC and workstation clients complete the client/server system.

In support of the client/server systems, the Contractor shall:

- provide systems management for both the remote and local computer systems to assure a responsive and secure system environment for the real-time processing and release of the operational NDBC data and for mainstream processing for all users;
- recommend, document, and when approved by NDBC utilize standard operating procedures, including procedures for file usage, system back-up, system maintenance, and system recovery;
- provide for continual monitoring and analysis of system usage and performance and maintain system activity logs;
- through LAN and WAN technology, monitor and manage the remote systems data input, processing, and output;
- evaluate and install NDBC supplied system software, as required, to ensure the system remains current;
- provide configuration management of all hardware and software system configurations and locations.
- provide independent software testing as directed by NDBC to thoroughly evaluate the operational functioning of each program through systematic development of test cases.

In addition to the client/server system, the Contractor shall be responsible for the systems management of the NDBC LAN and WAN computer network, office automation and document management systems, and CADD systems. The NDBC computer network runs on fiber optic and Category five unshielded twisted pair (Cat 5 UTP) and is a fast/switched Ethernet system handling dedicated and shared 10 MHz through 100 MHz Ethernet. All buildings are connected by fiber optic cable, and all communications switches and network adapters are in place. A Firewall security system is installed to protect the NDBC computer network. E-mail, office automation tools, and an operating, efficient network is vital to successful productivity by all users. The CADD system consists

of networked workstations, PCs, associated printers and plotters, and CADD software.

The Contractor shall support these systems by:

- coordinating the proper installation and effective operation of the system hardware, system software, and application software;
- designing, developing, and maintaining a reliable, efficient computer network;
- performing necessary user training in both group and individual settings;
- developing, maintaining, and executing effective operating procedures; and
- investigating, reporting, and resolving problems.

The annual level of effort typically associated with this work has been approximately 10,100 hours.

6.4 Database Management

The Contractor shall provide database design, administration, and management for the NDBC computer systems and overall database coordination, allocation, and security, both informational and physical, to ensure effective and efficient utilization of database resources for all systems. NDBC uses the Oracle RDBMS for the operational station data and resource and financial management databases.

The Contractor shall:

- recommend, document, and when approved by NDBC maintain standard database operating procedures and ensure that all are current with the system configuration;
- establish and maintain secure updating and modification procedures to ensure database integrity;
- provide user interface for applications requiring database support, provide database definitions to users, and maintain database documentation, including database structure, parameter types, entity relations, and definitions for all NDBC databases;

- monitor performance of the database system for user responsiveness, user contention for resources, and system performance relating to the database and suggest modifications and enhancements;

- analyze and review current database technology and make recommendations for replacement, upgrades, and enhancements;

- propose implementation plans and database design for any new database requirements;

- evaluate and install new revisions of database-related software as required.

The annual level of effort typically associated with this work has been approximately 4,000 hours.

6.5 Software Development and Maintenance

The Contractor shall assist in defining requirements and shall design, program, test, and document software required for implementing, maintaining, and upgrading the capabilities of the NDBC communications and data processing computer complex.

As directed by NDBC, the Contractor shall:

- develop new or modify existing software to meet changing NDBC requirements and objectives, for example: changes in operational systems, such as sensors or payloads necessitating changes in data transmission format and the shore side systems software; developing applications using in-house software tools; providing interactive editing and software for data archive; establishing interfaces for commercial off-the-shelf (COTS) software; developing GUI applications; and continual refinement of meteorological and oceanographic data acquisition and processing techniques;

- develop software to apply automated quality control algorithms for real-time data processing and follow on data analyses of operational station data;

- develop GUI applications for data quality and data analysis;

- document and maintain all computer programs and automated data systems in compliance with NDBC standards, guidelines, and configuration management procedures for software life cycle management;

- maintain and modify the NDBC owned and provided Financial Management System;

- maintain and modify the NDBC owned and provided data management system which includes functions such as inventory control, property tracking, equipment configuration management and reliability, shipping and receiving, and other work control or equipment management functions;

- support upgrades or implementations using new technologies as required.

The annual level of effort typically associated with this work has been approximately 15,000 hours.

6.6 Computer Operations

The Contractor shall provide technical and operational support in analyzing and maintaining the data processing services for all NDBC operational systems, communication systems, database systems, prototype programs, business programs, office automation, developmental efforts, special data analyses, and moored buoy position fixing systems.

The Contractor shall:

- provide operation, maintenance, security, and system management of the hardware and software for the NDBC computer systems, including support of procurement and integration of software and hardware and the installation and maintenance of equipment-either directly or through coordinating vendor support;

- provide troubleshooting activities when problems occur on NDBC computer systems, determine corrective action and resolve problems, coordinating vendor field service if required;

- operate the NDBC computer systems seven days a week (sixteen hours per day Monday through Friday and eight hours on Saturday and Sunday; however mission requirements may require work outside the normal hours

at certain times) to maintain current data processing, support the real-time dissemination of data, and support field maintenance activities;

- provide data handling, processing operations, input/output control, and scheduling for NDBC processing requirements including validation of the processing and delivery of the data products;

- operate and maintain the NDBC computer security firewall;

- operate and maintain the NDBC Web server, ftp server, and Dial-a-Buoy automated voice dissemination system, and other special data quality and server systems.

The annual level of effort typically associated with this work has been approximately 8,000 hours.

6.7 Computer Networks and Data Communications

The Contractor shall provide technical and operational support in managing, operating, analyzing, improving, and maintaining the NDBC computer network, LAN and WAN, data communications for the operational station network, prototype programs, experimental stations and test systems, data and interactive communications between NDBC computer systems and other agency computers, Internet communications, and electronic mail.

The Contractor shall:

- propose, install, manage, operate, and maintain the communications hardware, software, and various communications protocols required for these activities;

- propose and when approved by NDBC implement solutions to communications problems;

- use network analysis tools and other means to analyze and improve the operation and performance of the network as required;

- monitor developing communications and network technologies in order to identify more efficient implementation and use of the computer network and data communications systems;

- develop recommendations and propose plans for enhancements and improvements to the NDBC computer network and data communications systems;

- support the real-time processing by monitoring and coordinating the data communications requirements for the data received through GOES and NOAA Polar-Orbiting Operational Environmental Satellites (POES) with NESDIS, Service Argos, and OSO;

- establish and maintain control files for the distribution of the GOES data, and process and disseminate the real-time data;

- monitor all NDBC data communications through the GOES via the NESDIS ground facility and conduct ongoing liaison as required, and all other NDBC data communications;

- establish and maintain control files for acquisition and dissemination of data through the satellites;

The annual level of effort typically associated with this work has been approximately 3,500 hours.

6.8 Environmental Data Analysis and Quality Control, and Scientific Support

The Contractor shall monitor all meteorological and oceanographic data reported by NDBC stations to verify their validity. When data quality does not meet NDBC accuracy requirements, the Contractor shall withhold such data from real-time release and archive, and the Contractor shall document such instances in order to initiate the NDBC repair cycle. As tasked, the Contractor shall also perform scientific studies and analyses that typically focus on application or other usefulness of NDBC environmental data in operations or research.

The Contractor shall:

- ensure that data undergo NDBC automated data quality control processing and are released to the GTS within 30 minutes;

- ensure that subtle data anomalies not detected by automated algorithms are identified and handled appropriately within 48 hours;

- operate and maintain the NDBC home page and Dial-a-Buoy systems, including timely and accurate posting of station data and metadata;

- execute procedures in a timely manner to recover all environmental data not delivered in real-time; perform standard quality control on such data; and ensure such data are submitted to the data archives and/or provided to special customers, as tasked;

- review and edit environmental data prior to processing for delivery to the national archive centers (i.e., National Climatic Data Center (NCDC) and National Oceanographic Data Center (NODC)) and to special customers, as tasked;

- ensure that metadata which describe the measurement location and process, such as water depth and data acquisition time, are archived correctly;

- document all extreme or significant data recorded by NDBC stations;

- perform evaluations or analyses of data measured during extreme or unusual events, as tasked;

- support the formulation of data formats for both real-time dissemination and archival;

- provide weekly, quarterly, and annual statistical reports, and other non-routine reports of station status and performance, as tasked;

- when tasked, monitor and evaluate non-standard measurements provided by NDBC stations during field tests or experiments, but which may not enter the national archives;

- develop and improve analytical and presentation techniques, including multi-media and digital displays, that will make data easier to use or more useful to all users of NDBC data;

- develop and apply new or improved methods and automated tools to quality control data, as authorized by NDBC; and,

- when tasked, publish quality control methods, forecast techniques, analyses, and usability studies in refereed journals, conference proceedings, or technical reports to develop and improve analytical and presentation techniques, including multi-media and digital display, that will make data more useful to NWS forecasters and all users of NDBC data.

The annual level of effort associated with this work has been approximately 7,800 hours.

7.0 PROGRAM SUPPORT

The Contractor shall provide general administrative and logistical support to NDBC in the following areas: Business Support, Mail Services, Government Property, Shipping and Receiving, Consumable Supplies and Inventory, Government Vehicle Management, Telephone Switchboard Operations, Facilities Maintenance, Work Control, and Technical Multimedia Services.

7.1 Business Support

The Contractor shall provide support to the NDBC Administrative staff to include the preparation of technical plans and cost projections and the preparation of forecasts and analyses for year-end and ongoing activities.

The Contractor shall:

- provide a cost report for each cost invoice that presents, in a detailed and summary format, costs for labor, travel, and other accountable costs attributable to the contract in accordance with an appropriate accounting code supplied by NDBC;

- attend monthly management meetings, with key government and Contractor personnel to review contract status, provide a forum for the exchange of ideas, and particularly, to identify and discuss potential problems and their solutions;

- provide a written monthly status report to NDBC that document progress of tasks;

- provide a bi-weekly report to each fund manager which details the total (fully loaded) costs of each active IWR;

- utilize the NDBC owned and provided data management system to track and monitor IWRs issued to the Contractor. This activity includes the accurate tracking of labor hours, material costs, and travel expenditures by individual IWR and by project;

- coordinate processing of IWRs including copying, distributing, and filing.

Approximately 507 IWRs are processed annually.

7.2 Mail Services

The Contractor shall provide mail processing services for all NDBC incoming, outgoing, and internal mail at John C. Stennis Space Center (SSC).

The Contractor shall:

- provide courier service twice a day to pick up and deliver mail and packages between NDBC buildings and the NDBC Technical Services Contractor (NTSC);

- provide incoming U.S. Postal Service and internal mail delivery to SSC mail unit, sorting and bagging of incoming mail by NDBC Division, and opening and date stamping accounts payable and contracting office mail;

- meter all outgoing mail in accordance with U.S. Postal Service guidelines;

- coordinate express mail services with Government-contracted express service;

- process special mailings such as registered, certified, return receipt, etc.

Incoming mail consists of an average of two (2) mail cartons daily that are to be sorted by Division, bagged, and delivered to the NDBC Mailroom in Building 1100. Outgoing mail consists of an average of one (1) mail carton daily that is to be metered and delivered to the SSC Central Mailroom in time for daily USPS pickup. Approximately 900 pieces of Express Mail are processed annually. Approximately 100 pieces of mail requiring special services such as registered, certified, insured, special handling, return receipt, restricted delivery are processed annually.

7.3 Government Property Control

The Contractor shall utilize an NDBC owned and provided data management system to manage a property control program for all NDBC government property. The Contractor shall be responsible for approximately 10,000 individual items of government property.

The Contractor shall:

- control, protect, and preserve all Government assigned property;
- affix bar code labels to newly procured property items to facilitate property control and inventory;
- prepare and submit to the Government Department of Commerce Property Transaction Request forms for accountable property inventory additions, deletions, and changes;
- conduct at least one annual inventory and inventory reconciliation and provide a final inventory and reconciliation reports;
- maintain a system of records that accounts for the acquisition, tracking, accountability, and disposal of Government property within an NDBC owned and provided data management system;
- dispose of excess property through NASA Redistribution Center in accordance with NASA and NDBC procedures.

There are approximately 10,000 individual pieces of government property that are tagged and controlled and that are located in all NDBC buildings (on and off site), on buoys, on C-MAN stations, on the hardstands, and at the NDBC dock. An average of 1,200 new property items are acquired annually and 300 items are disposed of at the on-site Redistribution Center. Property meeting the Department of Commerce requirements for accountability are processed on Property Transaction Request forms and number about 120 forms annually with an average of 3 property items per form.

7.4 Shipping and Receiving

The Contractor shall provide pickup and delivery of shipments at local and area airports/shipping depots and of locally procured

materials. The Contractor shall also provide on-site transfer of equipment and materials.

The Contractor shall:

- provide efficient, responsive, and expedient conveyance and receipt of all items;
- provide courier service between and among all NDBC leased facilities at SSC and offsite locations;
- exercise control and protection of all items during shipping and receiving process and courier activities;
- maintain enclosed restricted access area for shipping and receiving activities;
- gather, stage, and pack items for shipment;
- determine transportation mode and carrier for each shipment;
- arrange for transportation of equipment and materials by the most cost-effective means commensurate with required operational service schedules utilizing Government and/or Commercial Bills of Lading;
- prepare, issue, track and reconcile Bills of Lading;
- ensure shipments arrive at destination by required delivery date;
- receive and process all incoming shipments, including opening, verifying, counting and inspecting;
- prepare and process Receiving Reports for all incoming items;
- maintain an accurate accounting of all equipment and material shipped or received;
- ensure that all hazardous materials are staged, packed and shipped in accordance with all applicable laws, rules, and regulations;
- expedite shipments when required to meet operational schedules;

- utilize an NDBC owned and provided data management system to maintain automated data files and data bases which support and document the shipping and receiving of all NDBC material;

- prepare and distribute weekly Logistics Activity Report.

There are an average of 1,200 outgoing shipments prepared annually consisting of about 24,000 line items and about 7,200 incoming shipments consisting mostly of newly procured items and field returns with a total of about 14,000 line items. Of those receipts, about 1,200 shipments are procurements requiring receiving reports and close coordination with NDBC Contracts personnel. Approximately 250 courier trips are made annually both on and off site.

7.5 Consumable Supplies and Warehouse Inventory

The Contractor shall monitor and maintain equipment and material requirements to ensure support for both on-site and off-site operations. The Contractor shall maintain the consumable inventory within the levels prescribed by NDBC, initiate equipment and material procurement requests, and submit them to NDBC for purchasing.

The Contractor shall:

- provide for the receipt, storage, warehousing, issuance, and replenishment of all consumable and expendable supplies and inventory;

- maintain status and cost accountability of all material requests and requirements;

- maintain control and security of warehouse consumable and expendable stock;

- conduct periodic inventories as required (a minimum of once per year) and prepare final inventory and reconciliation reports;

- review and recommend adjustments to expendable stock levels based on actual usage and projected requirements with particular emphasis on those operationally critical, long-lead time materials constituting the "critical items inventory;"

- stock new materials in response to ECOs and configuration modifications;

- utilize the NDBC owned and provided data management system to maintain automated data files and data bases which support consumable inventories.

There are currently 3,600 line items in the consumable inventory. An average of 4,800 requests for issue of stock items are processed annually. Approximately 12,000 line items are received for inventory stock annually from either procurements or field returns. Of the total stock items, about 50 items require separate identification and maintenance as shelf-life items. One physical inventory and one final report required annually of all consumable stock items.

7.6 Government-Furnished Vehicles

The Contractor shall use and manage assigned Government-furnished vehicles in accordance with General Services Administration (GSA) regulations and maintenance schedules. Government-furnished vehicles are restricted to use for "Official Government Business." Keys, credit cards, and log books shall be protected at all times. The contractor shall maintain records documenting mileage, repairs, and maintenance for each vehicle.

The vehicle fleet normally consists of 1 sedan, 6 pickup trucks/vans, and 2 stake-bed trucks. Additionally one NDBC-owned cargo trailer is managed and maintained. NDBC also owns two boats, which are stored at the NDBC Dock and on the hardstand area. Utilization is managed by the fleet manager but the boats are maintained by the Engineering Department.

The contractor shall:

- Maintain individual vehicle logs.

- Coordinate and arrange for preventive maintenance in accordance with GSA schedules.

- Coordinate and arrange for unscheduled maintenance or repair with GSA and NDBC.

- Maintain current vehicle credit cards.

- Maintain current and accurate records for vehicles, replacements, and loaners.

- Provide a duplicate sets of keys for all vehicles to the Government and keep keys current.

- Promptly report to NDBC and GSA all accidents, damages and missing vehicles.

- Submit to GSA monthly mileage reports for all vehicles.

7.7 Switchboard Support

The Contractor shall provide telephone switchboard support for all NDBC government phone lines. Telephone service is provided through the National Aeronautics and Space Administration telecommunications system.

The Contractor shall:

- provide switchboard services continuously throughout the NDBC workday (7:15 a.m.- 5:00 p.m. Monday through Thursday and 7:15 a.m. - 4:30 p.m. on Friday) including the lunch period;

- operate a government-provided answering machine for NDBC's main telephone number (extension 2800). The answering machine shall be activated during all non-duty hours.

- Messages will be delivered via phone call back or e-mail within 5 minutes of receipt.

There are approximately 60 government telephone lines to be answered when the individual is unable to answer the phone on his/her desk and it "rolls over" to the switchboard. All phones ring first on the employee's desk and second on the switchboard operator's phone. The answering machine receives approximately 120 messages annually.

7.8 Technical Multimedia and Data Repository Services

The Contractor shall provide technical multimedia and data repository services. This service consists of technical writing, typing, technical editing, composition, layout, graphics, and multimedia support in the preparation of technical publications and papers, presentations, brochures, and displays, including the NDBC Technical Bulletin, handbooks, and other similar material. The Contractor shall also provide for the storage, control, and distribution of all technical and administrative documentation relating to NDBC programs and operations. This part of the

function is essentially a central file which provides the library function for all NDBC documentation activities. Documentation shall include, as a minimum, contract deliverables, operations manuals, and official NDBC publications.

The Contractor shall:

- operate NDBC owned and provided computer hardware and software in the performance of this effort (applications available are detailed in section 6.1);
- maintain an NDBC Basic Slide and Vugraph File Library on NDBC programs and projects;
- initiate and process photographic, reproduction, and technical publication service requests to the NASA Contractor-operated Graphics Shop;
- transport, pack, and set-up displays and hand-outs at conferences as required, including PC-based multimedia presentations;
- control and maintain files of photographs commonly used in support of NDBC documentation;
- prepare and maintain computer-based photos and presentations;
- control and maintain electronic and/or hard-copy files of all documentation prepared;
- provide the necessary coordination with NDBC for approval and release of documentation in accordance with applicable NDBC Instructions;
- reproduce or arrange for reproduction of technical documentation on an as-needed basis.
- ensure that the latest revision of approved documentation is made available in response to requests;
- maintain current Technical Document Indices;
- maintain and store technical documents and publications, film, videotape, and other items, and distribute these items on request;

- maintain mailing lists as directed and distribute documents using the appropriate mailing list.

Approximately 300 jobs are submitted for a variety of services annually. Each job may involve 5-10 submissions for editing and revision before finalization. Approximately 150 standard vugraph/slides are to be maintained. Photographic requirements normally total about 400 jobs per year. On average, three to four conference exhibits are attended annually requiring support. Approximately 200 current documents are maintained and about 1,000 old documents are stored.

7.9 Government Provided Facilities

The Contractor shall be responsible for the proper use of the assigned NDBC facilities located principally in SSC Buildings 3203, 3205, and 3204. These include but are not limited to: high-bay service areas, the electrical cable shop, machine shop, electronics laboratories, computer room, storage and office space, logistics facilities, and other working space within the buildings assigned to NDBC, and the outside storage and work areas, including the STF, painting and blasting area, paint locker, launching ramp, and dock.

The Contractor shall:

- monitor preventive and scheduled maintenance of buildings and installed equipment and report discrepancies to the government;

- maintain orderly and clean working spaces and organize and maintain the warehouse and industrial-apron material storage areas;

- submit requests for maintenance and one-time jobs to the Program Support Division for NASA Facility Operations Support Contractor services.

8.0 QUALITY ASSURANCE PROGRAM

The Contractor shall develop, implement, and maintain a quality assurance system that conforms to the requirements of Mil-I-45208A entitled "Inspection System Requirements", and the NDBC's Quality Assurance Standards detailed in directive 1804-04.05 (See Appendix J).

The Contractor shall:

- prepare and submit a Quality Assurance Plan to NDBC within 30 calendar days after contract award for approval. This plan shall comply with the requirements of Mil-I-45208A and the current NDBC Quality Assurance Standards;

- execute the plan and review it at a minimum annually, or as a result of a change in the NDBC Quality Assurance Standards, to ensure compliance;

- develop Quality Assurance Procedures, as required, to implement the requirements of the approved Contractor Quality Assurance Plan including the development and maintenance of a comprehensive quality auditing program;

- maintain liaison with the NDBC Quality Assurance (QA) manager; and

- respond to Quality Deficiency Reports (QDRs) that may be issued by NDBC Quality Assurance Manager(QA).

- perform inspections to conform with the Government's Quality Specification (Mil-I-45208A) and all other mandatory requirements issued by NDBC;

- provide and maintain QA documentation as required by the Mil-I-45208A and NDBC's Quality Assurance Standards.

9.0 SAFETY AND ENVIRONMENTAL COMPLIANCE

The Contractor shall develop, implement, and maintain a safety and environmental compliance programs in accordance with Titles 29, 40, and 49, Code of Federal Regulations; U. S. Department of Commerce Occupational Safety and Health Manual; NOAA Environmental Compliance Manual; National Aeronautics and Space Administration (NASA)/SSC Safety Manual; NASA/SSC Hazardous Materials, Hazardous Waste and Solid Waste Management Plan; NDBC safety and environmental compliance procedures, NASA Pollution Prevention Plan, and all other Federal, state, and local safety and environmental regulations as they become required.

The Contractor shall:

- provide a Safety and Accident Prevention Plan and an Environmental Compliance Plan containing at a minimum the details for implementing all applicable elements of

the Safety and Environmental Compliance Program, including purposes, scopes, objectives, organization, roles of key personnel and managers in Safety and Environmental Compliance, inspections, training, investigation and reporting, field service requirements, and accident prevention measures; and

- submit these plans to the NDBC Contracting Officer within 30 calendar days after award for approval;

- implement the approved plan upon commencement of work under the contract.